Common Airborne Instrumentation System

CAIS

Configuration ID List

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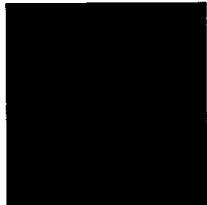Rev A

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1. INTRODUCTION

1.1 Purpose

One of the features of the Common Airborne Instrumentation System (CAIS) equipment is the ability to perform a configuration match test. This allows the ground support unit to interrogate all data acquisition unit (DAU) addresses in the system to discover which DAU types have been assigned which DAU addresses. As a result, each DAU type and signal conditioning card type must have a unique identification value (ID).

1.2 Responsibility

The Office of the Secretary of Defense (OSD) has established the CAIS Joint Program Office (CAIS JPO) as the overall controlling activity for the CAIS program. The CAIS JPO is responsible for changes and contents of this document.

1.3 Scope

This document will identify the configuration ID's for all CAIS and CAIS compliant line replaceable units (LRU's). CAIS compatible LRU's will be covered only to the extent vendors have requested ID's for their CAIS compatible equipment.

1.4 Definitions

Configuration ID - An ID unique to each DAU type. When requested by the CAIS Bus Controller, each DAU shall respond with its configuration ID. The configuration ID is assigned at time of manufacture.

DAU Address - See DAU ID.

DAU ID - An ID unique to each DAU on a CAIS bus. The DAU ID is assigned at time of installation by configuring the code plug (or equivalent).

1.5 Abbreviations

AATIS	Advanced Airborne Test Instrumentation System
CAIS	Common Airborne Instrumentation System
JPO	Joint Program Office
DAU	Data Acquisition Unit
DDAS	Digital Data Acquisition System
GSU	Ground Support Unit
ID	Identifier
LRU	Line Replaceable Unit

2. APPLICABLE DOCUMENTS

The following documents of the exact issue shown form a part of this document to the extent specified herein. In the event of a conflict between the documents referenced herein and the contents of this document, the contents of this document shall be considered a superseding requirement.

None.

3. CONFIGURATION ID'S

3.1 ID Classes

There are two classes of ID's that will be covered in this document. The first is the DAU ID. All DAU's must have a unique ID. The second is the Sub-DAU ID. These are ID's given to cards or modules within a DAU (e.g., signal conditioning cards). These ID's must be unique only within a particular DAU ID. All ID's are assigned as 16 bit codes; however, since some units can only respond with 12 bits, an attempt will be made to maintain 12 bit resolution.

3.1.1 DAU ID's

All DAU ID's will be assigned by the CAIS JPO. An attempt will be made to block manufacturers' units together. This will aid the ground support software in partially identifying unknown DAU's.

3.1.2 Sub-DAU ID's

Since Sub-DAU ID's are unique to a given DAU, manufactures may submit a list of Sub-DAU ID's for inclusion pending approval. Approval will be based upon adherence to the general principles presented in this document. Updates to the Sub-DAU ID lists will be accepted in the same manner as new inclusions.

All Sub-DAU ID lists will be treated as individual lists. However, there are some situations where the cards/modules in one DAU may also be used in another DAU. As long as it remains viable, the lists for the two (or more) DAU's will be linked. If there is a DAU specific item in one list, a reserve tag will appear in the other. This will make the two (or more) lists appear as one. If the need for the lists to diverge ever arises, the logistics will already be in place.

3.2 ID Assignments

TABLE 1 lists the CAIS DAU IDs.

TABLE 1 *CAIS DAU IDs*

ID (Hex)	DAU	Model Number	Manufacturer
0000	Reserved	---	---
0E0F*	AATIS ADAU	5310000-001	SCI, Inc.
0E8F*	ADAU	5319000-001	SCI, Inc.
8000	WBRU	MMSC-800-148	Aydin Vector
8010	PBC	PBC-800	Aydin Vector
8020	CNIM	CNI-800	Aydin Vector
F000	GDAU	5318700-001	SCI, Inc.
F010	DDAU	5318600-001	SCI, Inc.
F020	MDAU	MMSC-800-126	Aydin Vector
F030	MDAU/A	MMSC-800-147	Aydin Vector
F050	AVDAU	5319500-001	SCI, Inc.
FFFF	Reserved	---	---
* Tolerance $\pm 10_H$.			

3.2.1 AATIS ADAU

The Advanced Airborne Test Instrumentation System (AATIS) analog-discrete data acquisition unit (ADAU) accepts transducer inputs from a wide variety of sources, both analog and digital. Due to AATIS being the precursor to CAIS, AATIS DAU's are compatible with the CAIS bus. The AATIS ADAU Sub-DAU ID's are defined in TABLE 2.

TABLE 2 *AATIS ADAU Sub IDs*

ID (Hex)	AATIS SCC	Model Number
<08D0	Not Used	---
08EF	CSG	5146860-001
092F	PDM	5146800-001
096F	SDC	5146940-001
09EF	SRC	5146930-001
0A2F	ETR	5146920-001
0AEF	AA	5146840-001
0B2F	ADF1	5146870-001
0B4F	ADF2	5146880-001
0B6F	ADF3	5146890-001
0C2F	PSD	5146810-001
0CCF	RTSC2	5146820-001/002
0D0F	RTSC4	5146830-001/002
0D2F	TES	5146850-001
0E2F	FCPT	5146910-001
All IDs: Tolerance $\pm 10_H$.		

3.2.2 ADAU

The analog-discrete DAU (ADAU) accepts transducer inputs from a wide variety of sources, both analog and digital. These signals are conditioned by a series of user-selected signal conditioner cards. The SCC Sub DAU ID's are defined in TABLE 3.

3.2.3 AVDAU

The avionics DAU (AVDAU) interfaces to MIL-STD-1553, F-15 H009, and F-16 Advanced Weapons Multiplexed (WMUX) avionics busses in receive mode only.

3.2.4 CNIM

The CAIS noseboom interface module (CNIM) is a DDAS module designed to allow a specific noseboom interface unit access to the CAIS bus.

3.2.5 DDAU

The discrete DAU (DDAU) obtains the status of up to 128 single-ended external discrete input sources or up to 64 differential external discrete input sources.

3.2.6 GDAU

TABLE 3 *ADAU SCC Sub-DAU IDs*

ID (Hex)	SCC	Model Number
<08D0	Not Used	---
090F	CSG	5319270-001
094F	PDC	5319330-001
098F	SSDC	5319350-001
09AF	TCSC	5319390-001
09CF	ASDC	5319360-001
0A0F	SRC	5319380-001
0A4F	ETR	5319290-001
0A6F	BC	5319260-001
0A8F	FCPT	5319320-001
0AAF	EMUX-1	5319300-001
0ACF	EMUX-2	5319300-002
0B0F	Reserved (AA)	---
0B8F	ADF1	5319210-001
0BAF	ADF2	5319230-001
0BCF	ADF3	5319230-002
0C0F	SSC-2	5319370-002
0C4F	PSD	5319340-001
0CEF	VRSC	5319430-001
0D4F	TES	5319400-001
0D6F	SSC-1	5319370-001
0D8F	ADF4	5319230-004
0DCF	DAC	5319280-001
0DEF	Reserved (ARC)	---
0E4F	1553TI	5319410-001
0E6F	Reserved (A429)	---

All IDs: Tolerance ±10$_H$.

The global positioning system (GPS) DAU (GDAU) acquires time, space position, and other data from a GPS receiver which has been configured with a NAVSTAR GPS Receiver Instrumentation Port.

3.2.7 MDAU

The miniature DAU (MDAU) is a CAIS compliant unit. It is an Aydin Vector Micro Miniature Signal Conditioner (MMSC-800) configured with a CAIS bus interface. Functionally, it is similar to the ADAU. The MDAU is no longer a standard product; it has been replaced by the MDAU/A. The MDAU signal conditioning module (SCM) Sub-DAU ID's are defined in TABLE 4.

3.2.8 MDAU/A

The MDAU/A is the 'A' revision to the MDAU. The 'A' revision primarily upgraded the speed at which the MDAU would respond to the CAIS bus. The 'A' model is still referred to as the MDAU. The MDAU/A SCM Sub-DAU ID's are defined in TABLE 4.

3.2.9 PBC

The programmable bus controller (PBC) acts as a 1553 bus controller for multiple 1553 based transducers.

TABLE 4 *MDAU SCM Sub-DAU IDs*

ID Range (Hex)	MDAU SCM	Model Number
0000-03F0	AM-801	18102050
0400-07F0	AM-802	18102051
0800-0BF0	AP-801	18102031
0C00-0FF0	BR-801	18002100
1000-13F0	BR-802	18002101
1400-17F0	CA-801	18001040
2000-23F0	CA-804	18001043
2400-27F0	DF-801	18102030
2C00-2FF0	DM-801	18102020
3000-33F0	DM-801A	18102022
3800-3BF0	Reserved (WBRU)	---
3C00-3FF0	LV-801	18101121
4000-43F0	Reserved (WBRU)	---
4400-47F0	SC-801	18002010
4800-4BF0	SC-802	18002011
4C00-4FF0	SC-802A	18002019
5000-53F0	SC-802B	18002020
5800-5BF0	SC-804	18002013
5C00-5FF0	SC-804V	18002018
6000-63F0	SC-805	18002014
6400-67F0	SC-806	18002015
6C00-6FF0	SC-808	18002017
7400-77F0	PSI-864 A/B	18102102/18102103
7800-7BF0	SD-801	18102040
7C00-7FF0	SD-802	18102041
8400-87F0	SD-804	18102043
8800-8BF0	SM-801	18102201
8C00-8FF0	SM-804	18102204
9000-93F0	SR-801	18102010
9400-97F0	TCR-801/802	18101101/18101104
980-09BF0	TCR-801A/802	18101122/18101104
9C00-9FF0	VC-801	18101119
A000-A3F0	TC-801	18102060

The ranges account for the dash numbers. The first ID in the range is -1, the second is -2 etc.

3.2.10 WBRU

The wide band remote unit (WBRU) accepts wide band (high sample rate) inputs typical of flutter analysis. The WBRU SCM Sub-DAU ID's are defined in TABLE 5.

TABLE 5 *WBRU SCM Sub-DAU IDs*

ID Range (Hex)	MDAU SCM	Model Number
0000-03F0	Reserved (MDAU)	---
0400-07F0	Reserved (MDAU)	---
0800-0BF0	AP-801	18102031
0C00-0FF0	Reserved (MDAU)	---
1000-13F0	Reserved (MDAU)	---
1400-17F0	Reserved (MDAU)	---
2000-23F0	CA-804	18001043
2400-27F0	DF-801	18102030
2C00-2FF0	DM-801	18102020
3000-33F0	DM-801A	18102022
3800-3BF0	DP-801/802	18101123/18101124
3C00-3FF0	Reserved (MDAU)	---
4000-43F0	RM-801	18101135
4400-47F0	Reserved (MDAU)	---
4800-4BF0	Reserved (MDAU)	---
4C00-4FF0	Reserved (MDAU)	---
5000-53F0	Reserved (MDAU)	---
5800-5BF0	SC-804	18002013
5C00-5FF0	SC-804V	18002018
6000-63F0	Reserved (MDAU)	---
6400-67F0	Reserved (MDAU)	---
6C00-6FF0	Reserved (MDAU)	---
7400-77F0	Reserved (MDAU)	---
7800-7BF0	SD-801	18102040
7C00-7FF0	SD-802	18102041
8400-87F0	SD-804	18102043
8800-8BF0	Reserved (MDAU)	---
8C00-8FF0	Reserved (MDAU)	---
9000-93F0	SR-801	18102010
9400-97F0	TCR-801/802	18101101/18101104
9800-9BF0	TCR-801A/802	18101122/18101104
9C00-9FF0	VC-801	18101119
A000-A3F0	Reserved (MDAU)	---

The ranges account for the dash numbers. The first ID in the range is -1, the second is -2 etc.

APPENDIX A DAU ID REQUEST FORM

DAU Abbreviation	**Model Number**

DAU Description (2-3 Sentences)

Note: If DAU abbreviation is an acronym, please spell out as part of the description.

Company	
Address	
City, State & Zip	
Phone	
Fax	
Point of Contact	

Date Rcvd _____	DAU ID Assigned _____
Further Action Req'd YES NO	Sub DAU IDs Req'd YES NO
	Sub DAU ID Request Attached YES NO

APPENDIX B SUB-DAU ID REQUEST FORM

DAU Abbreviation		Model Number	
Sub-DAU ID	**Name**	**Model Number**	

Note: If changes to modules are not treated as revisions, but as different configurations, consider a range of IDs for each unit.

Company

Address

City, State & Zip

Phone

Fax

Point of Contact

| Date Rcvd _____ | | New / Updated Request | NEW   UP |
| Further Action Req'd   YES   NO | | DAU ID Request Attached | YES   NO |

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13. ABSTRACT (Maximum 200 words)

The Department of Defense has developed the Common Airborne Instrumentation System (CAIS) to promote standardization, commonality, and interoperability among aircraft test instrumentation systems. The value of CAIS is that it allows aircraft test and evaluation facilities to use common airborne systems and ground support equipment, as well as common technical knowledge and procedures for these systems. It is the responsibility of the CAIS Program Office, a tri-service group, to conduct requirements analyses, manage system upgrades, and provide full life-cycle support for this system. This interface control document (ICD) was written to provide a single document that designers of CAIS bus controllers and data acquisition units could reference to ensure interoperability on the CAIS bus. This ICD establishes the requirements for digital command/response, time division multiplexing techniques for a single CAIS bus. It encompasses the physical, electrical, and protocol aspects of the CAIS bus.

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